

**CLAIMS**

1. A method of measuring temperature value associated with melting, softening or decomposition, comprising:
  - 5 forming an array of samples on a support tray;
  - placing the support tray onto a heating device provided with temperature sensing means;
  - illuminating the support tray and the whole array of samples;
  - imaging the array of samples by a digital device;
  - 10 varying the temperature of the heating device over a temperature range from below the anticipated melting, softening or decomposition point of the samples;
  - feeding an image of the whole array to a digital computer during the temperature variation sequence;
  - recording temperature values for the temperature of the heating device associated with
  - 15 each feed of image data;
  - reviewing the image data using image processing software loaded in the computer to detect changes in the image of the array, at each or selected sample locations;
  - logging the temperature of the heating device recorded in respect of an image change associated with a change in state of a sample.
- 20
2. A method according to claim 1, in which the image processing software detects changes in image intensity at sample locations.
3. A method according to claim 2 in which the heating device is provided with
- 25 temperature sensing means that gives a computer readable output of the temperature of the block; the imaging device is a digital camera or webcam that feeds images to a computer loaded with the image processing software; the computer records temperature data associated with each image; and the image processing software is used to detect changes in the image intensity at each or selected sample locations; and
- 30 the temperature associated with a significant change in intensity is noted.

4. A method according to claim 3, in which sequential images transmitted to the computer are stored in the computer memory with a temperature transmitted from the heating block at the time of creation of the image, and after completion of the heating cycle the stored images are processed to generate data relating to the intensity of the image at selected sample locations, and the intensity data and temperature data are used to generate a plot of intensity against temperature from which melting point values for the selected samples can be assessed.
5. Apparatus for measuring melting point values comprising:
  - 10 a heating device with temperature sensing means that gives a computer readable output of the temperature of the block;
  - a sample support tray that can be placed on the heating device to heat samples placed on the support tray;
  - a digital camera that can be positioned to image all samples on the support tray;
  - 15 means for illuminating the samples for observation by the camera;
  - control means for varying the temperature of the heating device over a temperature range from below the anticipated melting, softening or decomposition point of the samples to above the anticipated melting, softening or decomposition points of the samples;
  - 20 a computer to receive image data from the camera and temperature data from the sensing means on the heating block;
  - recording means to log images of the support tray and samples and record the temperature of the heating block;
  - an image processing program loaded in the computer and operable to review the
  - 25 images received from the camera, and monitor the intensity of the image at each or selected sample locations;
  - whereby significant changes in the images can be correlated with the temperature of the heating block.
- 30 6. Apparatus according to claim 5 in which the camera is a webcam transmitting image data to the computer during the heating sequence.